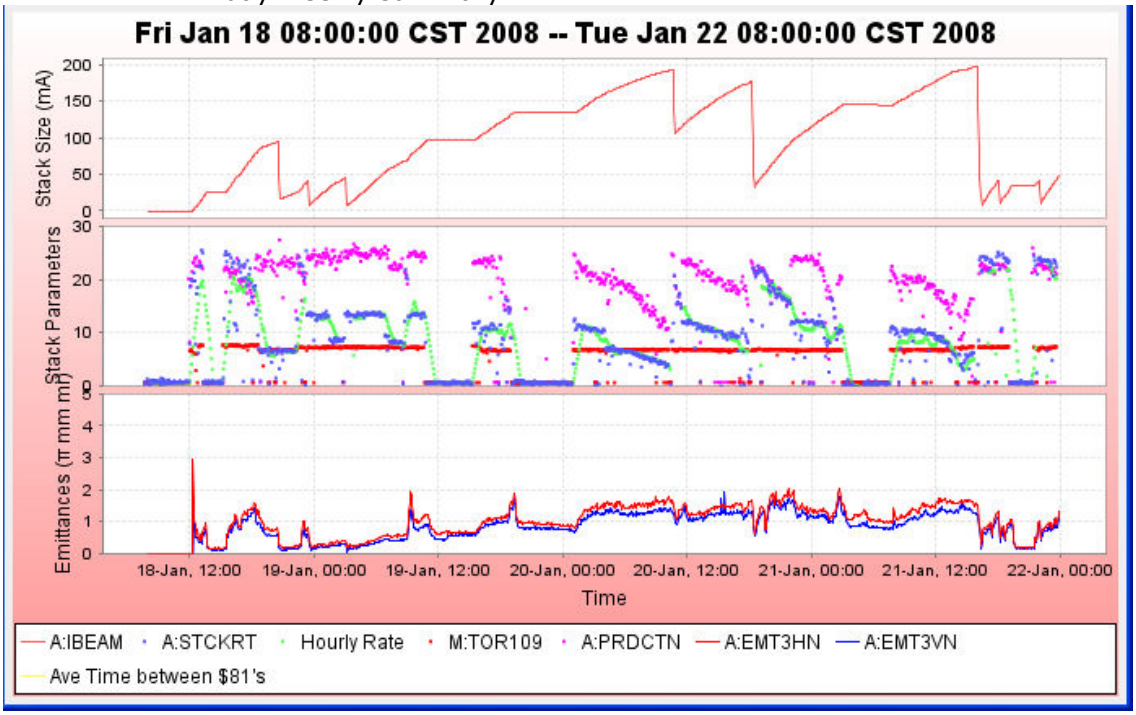
2008-01-22 Morning Pbar Notes

Monday, January 21, 2008
6:46 PM

- **Stacking**
  - Started Friday morning with a lost 62mA stack
    - A:IB ground current
    - Access was made to find the source of the fault.
    - Ground water seepage was found to corrode a insulating ceramic support for ceiling mounted bus in the vicinity of A4Q7.
    - Ceramic was removed, and herculite placed in redirect ground water.
  - DRF1-7 output falling off.
    - We will keep an eye on this station.
    - Wes Mueller suspects that replacing the tubes in the tunnel would fix the problem.
    - The DRF1 sum fanback voltage is still about 5.3MV, so we should be ok.
  - Downtime
    - Sunday: 01:15:31- D:EKIK held off beam for about 30 minutes. D:E**KIK** module 2 had tripped but the timer was not counting. Ops cycled the supply for the tube and the timer started again. A mere 15 minutes later the interlock reset and we were able to stack.
    - Sunday: 19:45:14- **M:USWSTA** (**U**p**S**tream **SW**eeper magnet **ST**atus **A**) came into alarm. Checked PBKick and it polled, but **P12 TARGET subpage 3** was mostly DPM_Pending. PBKICK (AP0, racks next to south door) was power cycled and then **M:USWA** was given a reset-on-reset.
      - Currently cycling the PBKICK front end requires a trip to AP0.
      - Experts are working on a remote cycling solution for the future.
    - Monday: D:IKIK scope lost communication. Cycled scope. This happens periodically.
  - Beam on target
    - Started Friday, 10 turns at 6.9e12
    - Most of the weekend ran either
      - 8 turns at around 6.1e12, or
      - 9 turns at around 6.5 to 6.6e12.
      - We are now back to 10 turns, with ~7e12 on target.
  - Peak stack rates from Friday until today were.
    - 23.73mA/hr, 15.24mA/hr, 18.88mA/hr, 23.14mA/hr
  - Due to electron cooling issues, we had a number of large stacks:
    - Sunday morning: 192mA
    - Sunday evening: 177mA
    - Monday evening: 198mA
  - The large stacks gave us opportunity to run the ion flusher.
    - We did not see any large stack instabilities that are common with large stacks without the flusher running.
    - We do have some minor tuning details to work out. The ARF2 stabilizing RF can put a coherent spike on the longitudinal display, which can skew the revolution frequency used in the tune measurements. The resulting error in the tune measurement is probably trivial for small stacks, but can be large enough to cause problems with larger stacks.
    - If time permits, we will show a plot or two of the Flusher in action during the Friday weekly summary.

Friday weekly summary.



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- # Transfers
  - Unstacked a total of 802mA in 47 transfers in twelve sets.
  - Overall 95% efficiency to MI and 90% to RR.
  - Efficiency down due to transfers from large stacks.
  - I:BEAMS values were again posting correctly in the Recycler shot scrapbook.
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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Column 1 Pbar Transfer Shot #	Column 2 Recycler Shot #	Column 4 Transfer Time		Column 21 A:IBEAMB sampled on $91 (A:IBEAM1), E10	Column 22 A:IBEAMB sampled on $94 (A:IBEAM2), E10	Unstacked (mA)	Column 23 R:BEAMS (R:BEAM E0[0]) pre xfer E10	Column 24 R:BEAM (R:BEAM E0[1]) post xfer, E10	Stashed	Acc to RR Eff	Column 27 MI DCCT SMALL BEAM (I:BEAMS), E10	Column 28 MI Before Extraction (I:BEAM6), E10	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets
2	6932	4387	Tuesday, January 22, 2008	6:40:04 AM	45.788	10.987	34.801	124.857	156.907	32.05	0.92	33.028	33.591	0.949053	0.965231	3	1
3	6931	4386	Tuesday, January 22, 2008	4:51:11 AM	41.988	9.588	32.400	95.253	125.489	30.24	0.93	31.235	31.488	0.964043	0.971852	3	1
4	6930	4385	Tuesday, January 22, 2008	3:16:05 AM	42.588	9.188	33.400	64.320	95.519	31.20	0.93	32.523	32.315	0.973743	0.967515	3	1
5	6929	4384	Tuesday, January 22, 2008	1:35:19 AM	75.188	10.987	64.201	11.204	65.134	53.93	0.84	59.323	59.318	0.92402	0.923942	4	1
6	6928	4382	Monday, January 21, 2008	10:01:11 PM	42.988	9.788	33.200	198.986	231.167	32.18	0.97	32.076	31.989	0.966145	0.963524	3	1
7	6927	4381	Monday, January 21, 2008	6:05:13 PM	42.787	9.788	32.999	170.721	201.065	30.34	0.92	31.166	31.473	0.944453	0.953756	3	1
8	6926	4380	Monday, January 21, 2008	4:03:28 PM	197.788	8.388	189.400	3.819	172.961	169.14	0.89	182.187	184.055	0.961917	0.971779	10	1
9	6924	4377	Sunday, January 20, 2008	6:14:27 PM	176.988	32.388	144.600	72.774	200.257	127.48	0.88	136.353	135.798	0.942967	0.939129	6	1
10	6922	4376	Sunday, January 20, 2008	10:41:48 AM	191.788	105.788	86.000	-0.186	74.622	74.81	0.87	81.335	79.711	0.945756	0.926872	3	1
11	6921	4374	Saturday, January 19, 2008	3:06:54 AM	45.388	6.988	38.400	156.057	193.634	37.58	0.98	38.201	37.980	0.994818	0.989063	3	1
12	6920	4373	Friday, January 18, 2008	11:26:59 PM	41.788	7.788	34.000	124.508	157.279	32.77	0.96	33.074	32.759	0.972765	0.9635	3	1
13	6919	4372	Friday, January 18, 2008	8:32:31 PM	94.188	15.588	78.600	51.884	125.685	73.80	0.94	76.122	75.790	0.968473	0.964249	3	1
14	0	0	Saturday, January 00, 1900	12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.00	#DIV/0!	0.000	0.000	#DIV/0!	#DIV/0!		
15	0	0	Saturday, January 00, 1900	12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.00	#DIV/0!	0.000	0.000	#DIV/0!	#DIV/0!		
16	0	0	Saturday, January 00, 1900	12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.00	#DIV/0!	0.000	0.000	#DIV/0!	#DIV/0!		
17	0	0	Saturday, January 00, 1900	12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.00	#DIV/0!	0.000	0.000	#DIV/0!	#DIV/0!		
18	0	0	Saturday, January 00, 1900	12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.00	#DIV/0!	0.000	0.000	#DIV/0!	#DIV/0!		
19	0	0	Saturday, January 00, 1900	12:00:00 AM	0.000	0.000	0.000	0.000	0.000	0.00	#DIV/0!	0.000	0.000	#DIV/0!	#DIV/0!		
20							802.001			725.522	0.90	766.623	766.267	0.955888	0.955444	47.000	12.000

- # Studies Requests:
  - 8 GeV Optics Change: Request to put in a small 8 GeV set of quad changes in AP3 and P1 line.
    - The goal is to improve the match between the Accumulator and Main Injector.
    - The changes would be put in transparently when we are stacking.
    - Experts would need an extra 5-10 minutes of beamline tune-up on the following set of transfers.
    - The Runco approved this. Experts will coordinate with the crew chief.
  - One shot reverse protons:
    - Exerts would like to work on one shot 8 GeV reverse protons while we are stacking.
    - The impact will be minimal.
    - The RunCo approved this. Experts will coordinate with the crew chief.

- **Other Notes:**
- Paul's Numbers
  - Saturday 1-19
    - Most in an hour: 23.73 mA at Fri Jan 18 06:00:39 CST 2008
    - Best: 24.69 mA on 09-Jan-08
    - Average Production 22.66 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
    - Average Protons on Target 6.30 e12 Best: 8.77 e12 on 07/24/2007
    - Largest Stack 94.32 mA Best: 271.01 mA on 11/14/2007
  - Sunday 1-20
    - Most in an hour: 15.24 mA at Sat Jan 19 10:01:21 CST 2008
    - Best: 24.69 mA on 09-Jan-08
    - Average Production 21.18 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
    - Average Protons on Target 6.17 e12 Best: 8.77 e12 on 07/24/2007
    - Largest Stack 172.10 mA Best: 271.01 mA on 11/14/2007
  - Monday 1-21
    - Most in an hour: 18.88 mA at Sun Jan 20 19:28:17 CST 2008
    - Best: 24.69 mA on 09-Jan-08
    - Average Production 19.59 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
    - Average Protons on Target 6.06 e12 Best: 8.77 e12 on 07/24/2007
    - Largest Stack 177.33 mA Best: 271.01 mA on 11/14/2007
  - Tuesday 1-22

    Most in an hour: 23.14 mA at Tue Jan 22 03:11:41 CST 2008
    Best: 24.69 mA on 09-Jan-08
    Average Production 17.06 e-6/proton Best: 23.53 e-6/proton on 11/11/2007
    Average Protons on Target 6.21 e12 Best: 8.77 e12 on 07/24/2007
    Largest Stack 198.38 mA Best: 271.01 mA on 11/14/2007

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- Al's Numbers (Friday to Tuesday)

  Stacking
  Pbars stacked: 853.89 E10
  Time stacking: 73.12 Hr
  Average stacking rate: 11.68 E10/Hr

  Uptime
  Number of pulses while in stacking mode: 73150
  Number of pulses with beam: 67154
  Fraction of up pulses was: 91.80%

  The uptime's effect on the stacking numbers
  Corrected time stacking: 67.13 Hr
  Possible average stacking rate: 12.72 E10/Hr

  Recycler Transfers
  Pbars sent to the Recycler: 802.71 E10
  Number of transfers : 48
  Number of transfer sets: 13
  Average Number of transfer per set: 3.69
  Time taken to shoot: 02.25 Hr
  Time per set of transfers: 10.39 min
  Transfer efficiency: 85.55%

  Other Info
  Average POT : 6.38 E12
  Average production: 19.94 pbars/E6 protons

  * Red indicates a problem during data retrieval. See the message window for details.
  * Blue indicates that Pbar started and/or ended in Recycler shot mode. See the message window for details.